

Bigness of the Horizontal Moon at different Times, adding also the Consideration of the Faintness which Vapours sometimes throw on the Appearance.

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VI. *An Explication of the Experiment made in May 1735, as a farther Confirmation of what was said in a Paper given in January 30, 1734-5. to account for the Appearance of the horizontal Moon seeming larger than when higher. By the Same.*

HAVING made an Experiment with three Ivory Balls for Confirmation of what I had advanced, namely, that the Deception arises from our judging the *horizontal Moon* to be much farther than it is ; some Gentlemen of the Society were convinced by the Experiment, but others were not ; which obliges me to give this further Account of it, that People may judge of the Thing in Writing, which could not be so well attended to in the Hurry of several Persons viewing the Experiment in Haste.

1. Two equal Ivory Balls were set one beyond another in respect of the Eye at E, namely, A B at 20 Feet Distance from the Eye, and C D at 40.

2. It is certain, by the Rules of Optics, that the Eye at E or F will see the Ball C D under an Angle but half as big as it sees the Ball A B ; that is, that the Ball C D must appear no bigger than the Ball o p placed by the Side of A B.

3. But

3. But when looking at the two Balls (Fig. 6.) with the naked Eye in an open Room, we consider that CD is as far again from the Eye as AB, we judge it to be as big as AB, (as it really is) notwithstanding it subtends an Angle but of half the Bigness.

4. Now if, unknown to the Spectator, (or while he turns his Back) the Ball CD be taken away, and another Ball *op* of half the Diameter be placed in the same Line, but as near again, at the Side of AB, the Spectator thinking this last Ball to be at the Place of CD, must judge it to be as big as CD, because it subtends the very same Angle as CD did before.

It follows therefore—That if a Ball be imagin'd to be as far again as it really is, we make such an Allowance for that imagin'd Distance, that we judge it to be as big again as it is, notwithstanding that the Angle under which we see it, is no greater, than when we look at it, knowing its real Distance.

For this Reason the Moon looks bigger in the Horizon, and near it, than at a considerable Height, or at the Zenith: Because it being a common Prejudice to imagine that Part of the Sky much nearer to us which is at the Zenith, than that Part towards the Horizon; when we see the Moon at the Horizon, we suppose it much farther; therefore as it subtends the same Angle (or nearly the same Angle) as when at the Zenith, we imagine it so much bigger as we suppose its Distance greater.

The Reason why this Experiment is hard to make, is because the Light from the Ball *op* is too strongly reflected on account of its Nearness; but if we could give it so little Light as to look no brighter than the Ball CD, it would deceive every body. I have made

the Experiment so as to deceive such as were not very long-sighted; but I must confess I have found it very hard to deceive those who see at a great Distance; tho' they would all be deceiv'd, if the Distances were of 300 or 600 Foot. Now in the Case of the Moon, the Deceit is help'd, because the Vapours, thro' which we see it when low, take away of its Brightness, and therefore have the same Effect as would (or does) happen in the Experiment, when the Light of the Ball *o p* strikes the Eye no stronger than the Light of the Ball C D.

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VII. *A Letter from Joseph Atwell, D. D. F. R. S. and Principal of Exeter College, Oxford, to Dr. Mortimer, R. S. Secr. containing some Observations on a Man and Woman bit by Vipers.*

*Exeter College, Oxford, July 24, 1734.*

*S I R,*

THE Man who was lately bitten by a *Viper* in the Presence of yourself and several Members of the *Royal Society*, having been recommended to some in this Place by Dr. *Oliver* of the *Bath*, I imagin'd that Sir *Hans Sloane* and you will be pleased with an Account of such Experiments as have been made here. *July 3d*, the Man was bit in the Presence of several besides myself, in the public Hall of this College. He received two Punctures in the Wrist, a little above the Thumb: The Blood issued, and more Venom lay upon